National Transportation Safety Board

Office of Aviation Safety
Washington, D.C. 20594-2000
June 28, 2006

METEOROLOGY FACTUAL REPORT

DCA06MF016

A. ACCIDENT

Location: Boston Harbor, Massachusetts
Date: June 12, 2006
Time: 1200-1800 eastern standard time
Ship: Ferry Massachusetts

B. METEOROLOGICAL SPECIALIST

Donald E. Eick
Senior Meteorologist
National Transportation Safety Board
Operational Factors Division, AS-30
Washington, D.C. 20594-2000

C. DETAILS OF INVESTIGATION

The National Transportation Safety Board's (NTSB) meteorologist specialist was not on scene for this investigation and gathered all the weather data for this investigation from the Washington D.C. office from official National Weather Service (NWS) sources including the National Climatic Data Center (NCDC). Local time is based on eastern daylight time (EDT), which is +4 hours to Universal Coordinated Time (UTC). Directions are referenced to true north and distances in nautical miles. Heights are above mean sea level (MSL) unless otherwise noted. Visibility is in statute miles and fractions of statute miles.

1.0 Synoptic Situation

The northeast section of the NWS Surface Analysis Chart issued for 1400 local is included as figure 1. The chart depicted a low pressure system with a central pressure of 1010-hectopascals (hPa) over western Massachusetts with a trough of low pressure extending southwest from the low across Connecticut, southeast New York, New Jersey and then west-

The closest weather reporting facility to the accident site was from General Edward Lawrence Logan International Airport (KBOS), Boston, at an elevation of 19 feet msl. The Boston Logan Airport was equipped with an Automated Surface Observation System (ASOS) and reported the following weather conditions surrounding the time of the accident:

Boston Logan (KBOS) weather observation at 1154 local, wind from 300 degrees at 7 knots, visibility unrestricted at 10 statute miles, a few clouds at 6,000 feet, ceiling broken at 25,000 feet, temperature 24 degrees Celsius (C) (76 degrees F), dew point 14 degrees C, altimeter 29.83 inches of Mercury (Hg). Remarks: automated observation, sea level pressure 1010.2-hPa, temperature 23.9 degrees C, dew point 14.4 degrees C.

Boston Logan (KBOS) weather observation at 1254 local, wind variable at 4 knots, visibility unrestricted at 10 statute miles, a few clouds at 4,500 feet, ceiling broken at 25,000 feet, temperature 24 degrees C (76 degrees F), dew point 14 degrees C, altimeter 29.82 inches of Hg. Remarks: automated observation, sea level pressure 1010.1-hPa, temperature 23.9 degrees C, dew point 13.9 degrees C.

Boston Logan (KBOS) weather observation at 1354 local, wind from 160 degrees at 5 knots, visibility unrestricted at 10 statute miles, scattered clouds at 4,900 feet, ceiling broken at 25,000 feet, temperature 24 degrees C (76 degrees F), dew point 14 degrees C, altimeter 29.82 inches of Hg. Remarks: automated observation, sea level pressure 1009.8-hPa, temperature 24.4 degrees C, dew point 14.4 degrees C, 12-hour maximum temperature 25.0 degrees C (77 degrees F), 12-hour minimum temperature 17.8 degrees C (64 degrees F), 3-hour pressure tendency fallen 0.2-hPa.

Boston Logan (KBOS) weather observation at 1454 local, wind from 130 degrees at 6 knots, visibility unrestricted at 10 statute miles, ceiling broken at 5,000, second broken layer at 25,000 feet, temperature 23 degrees C (73 degrees F), dew point 14 degrees C, altimeter 29.82 inches of Hg. Remarks: automated observation, sea level pressure 1009.6-hPa, temperature 23.3 degrees C, dew point 14.4 degrees C.

Boston Logan (KBOS) weather observation at 1554 local, wind from 120 degrees at 12 knots, visibility unrestricted at 10 statute miles, ceiling broken at 5,000, second broken layer at 25,000 feet, temperature 22 degrees C (71 degrees F), dew point 14 degrees C, altimeter 29.81 inches of Hg. Remarks: automated observation, sea level pressure 1009.4-hPa, temperature 21.7 degrees C, dew point 13.9 degrees C.

Boston Logan (KBOS) weather observation at 1654 local, wind from 110 degrees at 10 knots, visibility unrestricted at 10 statute miles, ceiling broken at 5,000, second broken layer at 25,000 feet, temperature 21 degrees C (70 degrees F), dew point 14 degrees C, altimeter 29.81 inches of Hg. Remarks: automated observation, sea level pressure 1009.4-hPa, temperature 21.1 degrees C, dew point 13.9 degrees C, 3-hour pressure tendency fallen 0.5-hPa.

Boston Logan (KBOS) weather observation at 1754 local, wind from 110 degrees at 9 knots, visibility unrestricted at 10 statute miles, scattered clouds at 6,000, ceiling broken layer at 25,000 feet, temperature 22 degrees C (72 degrees F), dew point 15 degrees C, altimeter 29.82 inches of Hg. Remarks: automated observation, sea level pressure 1009.6-hPa, temperature 22.2 degrees C, dew point 15.0 degrees C.

Boston Logan (KBOS) weather observation at 1854 local, wind from 120 degrees at 5 knots, visibility unrestricted at 10 statute miles, scattered clouds at 6,000, ceiling broken layer at 25,000 feet, temperature 21 degrees C (70 degrees F), dew point 15 degrees C, altimeter 29.83 inches of Hg. Remarks: automated observation, sea level pressure 1010.0-hPa, temperature 21.1 degrees C, dew point 15.0 degrees C.

Boston Logan (KBOS) weather observation at 1954 local, wind from 120 degrees at 3 knots, visibility unrestricted at 10 statute miles, a few clouds at 6,000, scattered clouds at 8,000 feet, scattered at 25,000 feet, temperature 19 degrees C (67 degrees F), dew point 16 degrees C, altimeter 29.84 inches of Hg. Remarks: automated observation, sea level pressure 1010.4-hPa, temperature 19.4 degrees C, dew point 15.6 degrees C, 12-hour maximum temperature 25.0 degrees C, 12-hour minimum temperature 19.4 degrees C, 3-hour pressure tendency risen 1.1-hPa.

2.0 Buoy data

The National Oceanic and Atmospheric Administration's (NOAA) National Data Buoy Center's Boston Station number 44013, located 16 miles east of Boston Harbor at latitude 42.35 degrees North and latitude 70.69 West, provided the following data during the period:

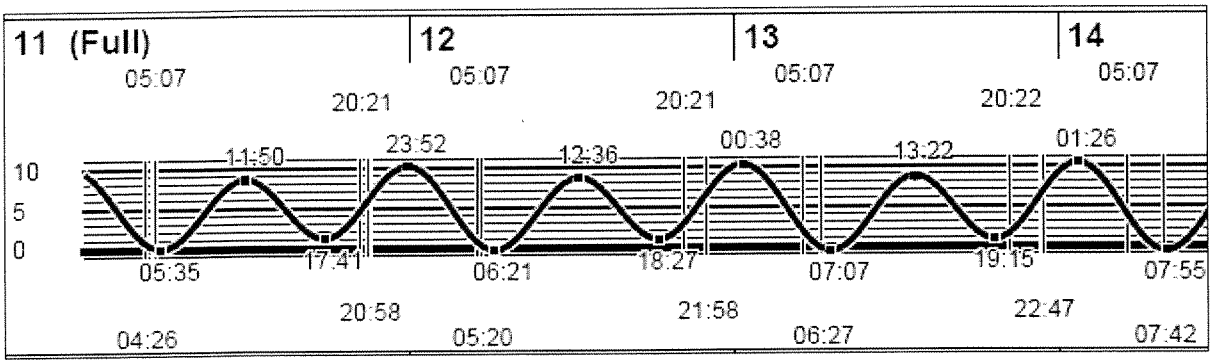
TIME (EDT)	WIND (KTS)	GUSTS (KTS)	WVHT (FT)	DPD (SEC)	PRES (HPA)	ATMP (°C)	WTMP (°C)	DEWP (°C)	PTDY (HPA)
1150	6	8	1.0	9	1010.1	16.0	13.4	13.0	+0.7
1250	6	6	1.0	9	1010.1	18.0	13.6	13.1	+0.7
1350	2	4	1.0	17	1010.1	20.1	14.4	13.1	+0.5
1450	10	12	1.0	17	1009.6	17.0	15.1	13.5	-0.5
1650	10	12	1.0	8	1009.6	16.4	14.1	12.9	-0.5
1750	12	12	M	M	1009.5	16.4	13.6	12.9	-0.6
1850	12	12	1.0	9	1009.6	16.3	13.6	13.3	+0.0
1950	10	12	1.0	9	1009.8	16.5	13.6	13.6	+0.0
2050	10	12	1.3	8	1010.3	16.4	13.7	13.9	+0.8
2150	10	10	1.3	8	1011.2	16.2	14.1	14.8	+1.4
2250	6	8	1.3	9	1011.2	16.6	14.2	14.8	+1.4
2350	6	6	1.3	8	1011.7	16.5	14.1	14.7	+0.7

Where:

WIND - Wind speed (knots) averaged over an eight-minute period for buoys.
GUSTS - Peak 5 or 8 second gust speed (knots) measured during the eight-minute period.
WVHT - Significant wave height (feet) is calculated as the average of the highest one-third of all of the wave heights during the 20-minute sampling period.
DPD - Dominant wave period (seconds) is the period with the maximum wave energy.
PRES - Sea level pressure (hPa).
ATMP - Air temperature (Celsius).
WTMP - Sea surface temperature (Celsius).
DEWP – Dew point temperature taken at the same height as the air temperature measurement.
PTDY - Pressure Tendency is the direction (plus or minus) and the amount of pressure change (hPa) for a three hour period ending at the time of observation.

3.0 Tide information

The tide table for Boston Light indicated a high tide at 1233 EDT with a low tide at 1828 EDT. The tide table graphically is provided below:



Donald E. Eick
NTSB Senior Meteorologist

northwest into Pennsylvania, Lake Erie, and into Quebec, Canada. To the northeast of the low pressure system another trough of low pressure was depicted extending into southern New Hampshire, and off the Maine coast. A defined cyclonic shift in the winds was observed with the low pressure system and trough of low pressure, due to the general lack of any strong pressure gradients wind speeds were generally noted at 10 knots or less across the region. Over eastern Massachusetts, the isobars and station models indicated a wind from the west-southwest at 10 knots or less.

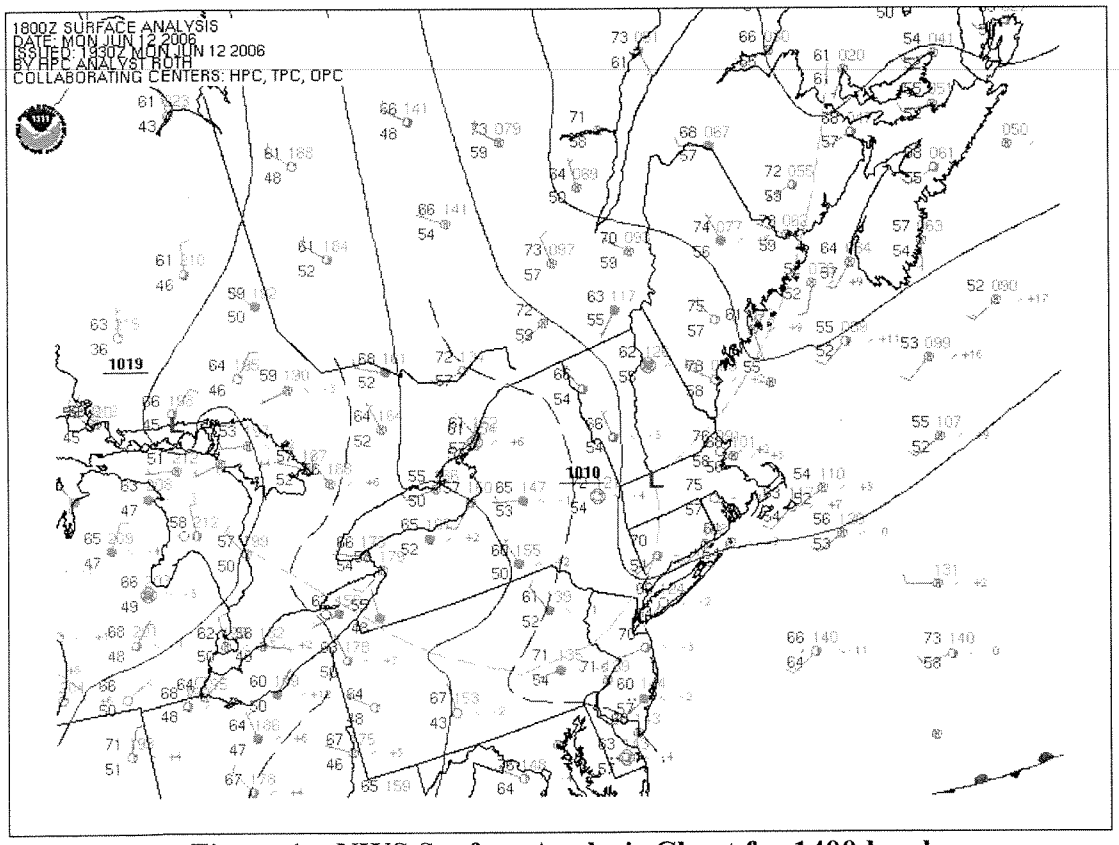


Figure 1 – NWS Surface Analysis Chart for 1400 local

2.0 Surface Observations

The surrounding area was documented utilizing official NWS Meteorological Aerodrome Reports (METARs). The following observations are taken from standard code provided in plain language, converted to local eastern daylight time (EDT), with cloud heights reported above ground level (agl).

2.0.1 General Edward Lawrence Logan International Airport (KBOS), Boston